



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

Ha

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,789	06/30/2000	Peter Tenereillo	CISCP662	2311
26541	7590	04/15/2005	EXAMINER	
RITTER, LANG & KAPLAN P.O. BOX 2448 SARATOGA, CA 95070			BURGESS, BARBARA N	
		ART UNIT		PAPER NUMBER
		2157		

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/608,789	TENEREILLO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Barbara N Burgess	2157	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 14 March 2005.

2a)  This action is FINAL.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-38 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5)  Claim(s) \_\_\_\_\_ is/are allowed.  
6)  Claim(s) 1-38 is/are rejected.  
7)  Claim(s) \_\_\_\_\_ is/are objected to.  
8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_ .

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_\_

## DETAILED ACTION

This Office Action is in response to an After-Final amendment submitted on March 14, 2005. Examiner withdraws the finality of listed claims. Claims 1-38 are presented for further examination.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 6-8, 10, 12, 14-15, 17, 21-29, 31, 34, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokomizo (hereinafter "Yoko", US Patent No. 6,163,796) in view of Yu (US Patent No. 6,351,775 B1) and in further view of Bruck et al. (hereinafter "Bruck", US Patent No. 6,801,949 B1).

As per claims 1, 14, 21, Yoko discloses a computer-implemented method, computer program product, computer system for providing a persistent connection between a client and a server, the method comprising:

- Receiving a request from a client for connection to the primary virtual server (column 3, lines 32-40, column 4, lines 53-59, column 5, lines 11-13, 28-30);
- Selecting one of the real servers for connection with the client (column 4, lines 11-15, 52-58, column 5, lines 3-5, 15-16, 22-23, column 6, lines 47-59);

Art Unit: 2157

- Sending a redirect message to the client specifying the selected real server (column 6, lines 14-16);
- Receiving a new connection request from the client for connection with the selected real server (column 6, lines 16-20).

Yoko does not explicitly disclose:

- Binding a primary virtual server to a set of URLs, each URL having an associated real server.

However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's binding a primary virtual server to a set of URLs, each URL having an associated real server in Yoko's method in order to balance the load among multiple Web servers having replicated information.

Yoko, in view of Yu, does not explicitly disclose:

- Wherein the client is connected to the selected real server for the duration of a transaction.

However, Bruck discloses a sticky VIP address assignment means that the VIP address will be forced to an assignment to that particular node, so that all traffic for that VIP address must be directed to that node (column 12, lines 45-64, column 13, lines 10-19, 38-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Bruck's wherein the client is connected to the selected real server for the duration of a transaction in Yoko's method in order for all data traffic for a particular node is directed to that node.

As per claim 6, Yoko does not explicitly disclose the method of claim 1 wherein the client request is an HTTP request.

However, in analogous art, Yu discloses typical service requests include World-Wide-Web page accesses, remote file transfers, electronic mail, and transaction support (column 6, lines 5-10, 20-22).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's client request is an HTTP request in Yoko's method in order for a user to gain access to webpages.

As per claim 7, Yoko does not explicitly disclose the method of claim 6 wherein the redirect is an HTTP redirect.

However, in analogous art, Yu discloses the server will server the request but piggyback a message with the returned object (URL) to tell the requester to send future requests to another server (column 12, lines 58-63, column 14, lines 50-56).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's redirect is an HTTP redirect in Yoko's method in order to communicate with the requester an updated server assignment.

As per claim 8, Yoko does not explicitly disclose the method of claim 1 wherein selecting one of the real servers comprises load balancing the real servers. However, in an analogous art, Yu discloses providing load balancing across a collection of servers such as proxy servers and Web servers in the Internet environment (column 1, lines 22-25).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's selecting one of the real servers comprises load balancing the real servers in Yoko's method in order to optimize caching efficiency.

As per claims 10 and 17, Yoko does not explicitly discloses the method and computer program product of claims 1 and 14 further comprising providing a backup link for each of the real servers to one of the other real servers. However, the use and advantages of providing a backup link for each real servers to one of the other real servers is well known to one skilled in the relevant art at the time the invention was made as evidenced by Yu (column 6, lines 10-13, column 10, lines 5-40).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's backup link for each real servers to one of the other real servers in Yoko's method in order to provide standby or recovery service for the associated real server.

As per claim 12, Yoko discloses the method of claim 1 wherein receiving a request from a client comprises receiving a request at a local director (column 3, lines 35-36, column 4, lines 46-50).

As per claim 15, Yoko discloses the computer program product of claim 14 wherein the computer readable medium is selected from the group consisting of CD-ROM, floppy disk, tape, flash memory, system memory, hard drive, and the data signal embodied in a carrier wave (column 11, lines 7-16).

As per claim 22, Yoko discloses a system for directing flow between a client and two or more servers, the system comprising:

- Means for receiving a request from a client content (column 3, lines 32-40, column 4, lines 53-59, column 5, lines 11-13, 28-30);
- Means for selecting a real server for providing content to the client (column 4, lines 11-15, 52-58, column 5, lines 3-5, 15-16, 22-23, column 6, lines 47-59);
- Means for receiving a new connection request from the client for connection with the selected real server (column 6, lines 16-20).

Yoko does not explicitly disclose:

- A primary virtual server bound to a plurality of URLs, each URL having an associated real server;
- Means for providing the URL of the selected real server to the client.

However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers

based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19). Yu further discloses sending a message to the requester telling them to send future requests to a particular server (column 12, lines 58-63).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's binding a primary virtual server to a set of URLs, each URL having an associated real server in Yoko's method in order to balance the load among multiple Web servers having replicated information.

Yoko, in view of Yu, does not explicitly disclose:

- Wherein the client is connected to the selected real server for the duration of a transaction.

However, Bruck discloses a sticky VIP address assignment means that the VIP address will be forced to an assignment to that particular node, so that all traffic for that VIP address must be directed to that node (column 12, lines 45-64, column 13, lines 10-19, 38-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Bruck's wherein the client is connected to the selected real server for the duration of a transaction in Yoko's method in order for all data traffic for a particular node is directed to that node.

As per claim 23, Yoko discloses a network apparatus for directing flow between a client and two or more servers, the network apparatus comprising:

- Memory (column 11, lines 7-16);
- A processor configured to:

Art Unit: 2157

- Receive a request from a client for connection to the primary virtual server (column 3, lines 32-40, column 4, lines 53-59, column 5, lines 11-13, 28-30);
- Select one of the real servers for connection with the client (column 4, lines 11-15, 52-58, column 5, lines 3-5, 15-16, 22-23, column 6, lines 47-59);
- Send a redirect message to the client specifying the selected real server (column 6, lines 14-16);
- Receive a new connection request from the client for connection with the selected real server (column 6, lines 16-20).

Yoko does not explicitly disclose:

- Binding a primary virtual server to a set of URLs, each URL having an associated real server.

However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's binding a primary virtual server to a set of URLs, each URL having an associated real server in Yoko's method in order to balance the load among multiple Web servers having replicated information.

Yoko, in view of Yu, does not explicitly disclose:

- Wherein the client is connected to the selected real server for the duration of a transaction.

However, Bruck discloses a sticky VIP address assignment means that the VIP address will be forced to an assignment to that particular node, so that all traffic for that VIP address must be directed to that node (column 12, lines 45-64, column 13, lines 10-19, 38-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Bruck's wherein the client is connected to the selected real server for the duration of a transaction in Yoko's method in order for all data traffic for a particular node is directed to that node

As per claim 24, Yoko, in view of Yu, does not explicitly discloses the method of claim 1 further comprising forwarding messages from the client to a backup server associated with the selected real server for the duration of the transaction.

However, Bruck discloses a sticky VIP address assignment means that the VIP address will be forced to an assignment to that particular node, so that all traffic for that VIP address must be directed to that node (column 12, lines 45-64, column 13, lines 10-19, 38-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Bruck's wherein the client is connected to the selected real server for the duration of a transaction in Yoko's method in order for all data traffic for a particular node is directed to that node

As per claim 25, Yoko does not explicitly disclose the method of claim 7 wherein the HTTP redirect comprises a URL of the selected real server.

However, in analogous art, Yu discloses the server will server the request but piggyback a message with the returned object (URL) to tell the requester to send future requests to another server (column 12, lines 58-63, column 14, lines 50-56).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's redirect is an HTTP redirect comprises a URL of the selected real server in Yoko's method in order to communicate with the requester an updated server assignment.

As per claim 26, Yoko discloses wherein a directed IP identifier provides one-to-one bindings between the virtual server and real server pairs (column 3, lines 30-34, 52-58).

As per claim 27, Yoko does not explicitly disclose the method of claim 26 further comprising linking said directed IP identifier to URL.

However, in an analogous art, Yu discloses determining with server (IP) address is to be selected based on the object identifier (URL) to handle a request (column 3, lines 1-14, column 4, lines 25-30, 60-65, column 6, lines 19-25, column 11, lines 14-17, column 12, column 14, lines 9-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate or implement Yu's linking IP identifier to URL in Yoko's method in order to achieve a better locality at at the server cache.

As per claim 28, Yoko does not explicitly disclose the method of claim 26 further comprising a URL associated with the virtual server inheriting weights and states assigned to the directed IP identifier.

However, in an analogous art, Yu discloses the goal is to balance the load among a collection of server without taking into account the identity of the object being requested (column 3, lines 57-61, column 4, lines 25-28, column 6, lines 10-13, 19-22, column 11, lines 59-64, column 14, lines 50-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's each pair of real and virtual servers share weight assignments in Yoko's method in order to balance the load on a collection of servers.

As per claim 29, Yoko does not explicitly disclose the method of claim 1 further comprising creating secondary virtual servers, each of said secondary virtual servers bound to one of the real servers.

However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's binding a primary virtual server to a set of URLs, each URL having an associated real server in Yoko's method in order to balance the load among multiple Web servers having replicated information.

As per claim 31, Yoko does not explicitly disclose the method of claim 8 wherein load balancing is only performed in selecting one of the real servers for connection with the client.

However, in an analogous art, Yu discloses providing load balancing across a collection of servers such as proxy servers and Web servers in the Internet environment (column 1, lines 22-25).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's selecting one of the real servers comprises load balancing the real servers for connection with the client in Yoko's method in order to optimize caching efficiency.

As per claim 34, Yoko does not explicitly disclose the system of claim 21 further comprising a plurality of secondary virtual servers, each of said plurality of secondary virtual servers associated with one of said plurality of real servers.

However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's binding a primary virtual server to a set of URLs, each URL having an associated real server in Yoko's method in order to balance the load among multiple Web servers having replicated information.

As per claim 36, Yoko discloses the system of claim 34 further comprising a local director (column 3, lines 35-36, column 4, lines 46-50).

Yoko does not explicitly disclose comprising said secondary virtual servers and configured to balance loads between said plurality of real servers.

However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's secondary virtual servers and balancing the load in Yoko's method in order to balance the load among multiple Web server having replicated information.

3. Claims 2-5, 9, 13, 16, 18-20 32, 35, 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokomizo (hereinafter "Yoko", US Patent No. 6,163,796) in view of Yu (US Patent No. 6,351,775 B1) in further view of Bruck et al. (hereinafter "Bruck", US Patent No. 6,801,949 B1) and in further view of Nguyen et al. (hereinafter "Nguyen", 6,609,213 B1).

As per claims 2, 16, and 35, Yoko, in view of Yu and Brucks, does not explicitly disclose the method, computer product, and system of claims 1, 14, and 34 further

comprising binding each of the real servers to a virtual server, each pair of real and virtual servers having the same IP address.

However, the use and advantages of real and virtual servers having the same IP address is well known to one skilled in the relevant art at the time the invention was made as evidenced by Nguyen (column 5, lines 59-67, column 6, lines 1-20).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate both virtual and real servers having the same IP address in Yoko's method in order for the virtual servers to provide standby or recovery service for the associated real server.

As per claim 3, Yoko does not explicitly disclose the method of claim 2 wherein the IP address is associated with the URL of the corresponding real server. However, in an analogous art, Yu discloses determining which server (IP) address is to be selected based on the object identifier (URL) to handle a request (column 3, lines 1-14, column 4, lines 25-30, 60-65, column 6, lines 19-25, column 11, lines 14-17, column 12, column 14, lines 9-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate or implement Yu's IP address is associated with the URL of the corresponding real server in Yoko's method in order to achieve a better locality at the server cache.

As per claim 4, Yoko does not explicitly disclose the method of claim 2 wherein each pair of real and virtual servers share weight assignments.

However, in an analogous art, Yu discloses the goal is to balance the load among a collection of server without taking into account the identity of the object being requested (column 3, lines 57-61, column 4, lines 25-28, column 6, lines 10-13, 19-22, column 11, lines 59-64, column 14, lines 50-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's each pair of real and virtual servers share weight assignments in Yoko's method in order to balance the load on a collection of servers.

As per claim 5, Yoko does not explicitly disclose the method of claim 2 wherein each pair of real and virtual servers share state information.

However, in an analogous art, Yu discloses the goal is to balance the load among a collection of server without taking into account the identity of the object being requested (column 3, lines 57-61, column 4, lines 25-28, column 6, lines 10-13, 19-22, column 11, lines 59-64, column 14, lines 50-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's each pair of real and virtual servers share state information in Yoko's method in order to balance the load on a collection of servers.

As per claim 9, Yoko, in view of Yu and Bruck, does not explicitly disclose the method of claim 1 further comprising providing a backup link for each of the real servers to the primary virtual server.

However, the use and advantages of providing a backup link for each real servers is well known to one skilled in the relevant art at the time the invention was made as evidenced by Nguyen (column 5, lines 59-67, column 6, lines 1-20).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate a backup link for the real servers in Yu's method in order for the virtual servers to provide standby or recovery service for the associated real server.

As per claim 13, Yoko discloses a computer-implemented method, for load balancing between servers and providing a persistent connection between a client and a server, the method comprising:

- Receiving a request from a client for connection to the primary virtual server to start a session (column 3, lines 32-40, column 4, lines 53-59, column 5, lines 11-13, 28-30);
- Selecting one of the real servers for connection with the client (column 4, lines 11-15, 52-58, column 5, lines 3-5, 15-16, 22-23, column 6, lines 47-59);
- Sending a redirect message to the client specifying the selected real server (column 6, lines 14-16);
- Receiving a new connection request from the client for connection with the selected real server (column 6, lines 16-20, 46-50);
- Forwarding to the selected real server transmission originating from the client (column 6, lines 16-20);

Art Unit: 2157

- Forwarding to the client transmission originating from the selected real server (column 6, lines 25-28, 50-52);

Yoko does not explicitly disclose:

- The primary virtual server being bound to a plurality of secondary virtual servers each associated with a real server.

However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's binding a primary virtual server to a set of URLs, each URL having an associated real server in Yoko's method in order to balance the load among multiple Web servers having replicated information.

Yoko, in view of Yu, does not explicitly disclose:

- Continuing to forward transmission from the client to the selected server throughout the session.

However, Bruck discloses a sticky VIP address assignment means that the VIP address will be forced to an assignment to that particular node, so that all traffic for that VIP address must be directed to that node (column 12, lines 45-64, column 13, lines 10-19, 38-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Bruck's wherein the client is

connected to the selected real server for the duration of a transaction in Yoko's method in order for all data traffic for a particular node is directed to that node.

Yoko, in view of Yu and Brucks, does not explicitly teach each pair of real and virtual servers having the same IP address.

However, the use and advantages of real and virtual servers having the same IP address is well known to one skilled in the relevant art at the time the invention was made as evidenced by Nguyen (column 5, lines 59-67, column 6, lines 1-20).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate both virtual and real servers having the same IP address in Yoko's method in order for the virtual servers to provide standby or recovery service for the associated real server.

As per claims 18 and 37, Yoko discloses a computer program product for binding a plurality of real servers to a primary virtual server for establishing persistent connection between a client and the real servers, the product comprising:

- Code that creates an identifier for each of the real servers (column 13, lines 5-7);
- Selecting one of the real servers for connection with the client (column 4, lines 11-15, 52-58, column 5, lines 3-5, 15-16, 22-23, column 6, lines 47-59);
- Sending a redirect message to the client specifying the selected real server (column 6, lines 14-16);
- Receiving a new connection request from the client for connection with the selected real server (column 6, lines 16-20, 46-50);

- Forwarding to the selected real server transmission originating from the client (column 6, lines 16-20);
- Forwarding to the client transmission originating from the selected real server (column 6, lines 25-28, 50-52);
- A computer-readable storage medium for storing the codes (column 11, lines 7-16). Yoko does not explicitly disclose:
  - Code that binds the real servers to the primary virtual;
  - Code that creates a plurality of secondary virtual servers, each of the secondary virtual servers associated with one of the real servers.

However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's binding a primary virtual server to a set of URLs, each URL having an associated real server in Yoko's method in order to balance the load among multiple Web servers having replicated information.

Yoko, in view of Yu, does not explicitly disclose:

- Code that maintains a persistent connection between a client and one of the real servers throughout a transaction.

However, Bruck discloses a sticky VIP address assignment means that the VIP address will be forced to an assignment to that particular node, so that all traffic for that VIP

address must be directed to that node (column 12, lines 45-64, column 13, lines 10-19, 38-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Bruck's wherein the client is connected to the selected real server for the duration of a transaction in Yoko's method in order for all data traffic for a particular node is directed to that node.

Yoko, in view of Yu and Brucks, does not explicitly disclose each pair of real and virtual servers having the same IP address.

However, the use and advantages of real and virtual servers having the same IP address is well known to one skilled in the relevant art at the time the invention was made as evidenced by Nguyen (column 5, lines 59-67, column 6, lines 1-20).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate both virtual and real servers having the same IP address in Yoko's method in order for the virtual servers to provide standby or recovery service for the associated real server.

As per claim 19, Yoko does not explicitly disclose the computer program product of claim 18 wherein the real server identifiers are URLs. However, in an analogous art, Yu discloses determining with server (IP) address is to be selected based on the object identifier (URL) to handle a request (column 3, lines 1-14, column 4, lines 25-30, 60-65, column 6, lines 19-25, column 11, lines 14-17, column 12, column 14, lines 9-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate or implement Yu's real server identifiers are URLs in Yoko's method in order to achieve a better locality at at the server cache.

As per claim 20, Yoko does not explicitly disclose the program product of claim 19 wherein the primary virtual server is bound to the URLs of the real servers. However, in an analogous art, Yu discloses each class (object's URL) is assigned to a virtual server. Dynamically, each virtual server is mapped to one of the actual servers based on an object's URL (column 11, lines 59-64, column 12, lines 1-5, 26-28, column 14, lines 14-19).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's binding a primary virtual server to a set of URLs, each URL having an associated real server in Yoko's method in order to balance the load among multiple Web servers having replicated information.

As per claim 32, Yoko does not explicitly disclose the method of claim 13 wherein receiving a request from the client comprises receiving an HTTP request and forwarding to the selected real server transmission comprising forwarding an HTTP request. However, in analogous art, Yu discloses typical service requests include World-Wide-Web page accesses, remote file transfers, electronic mail, and transaction support (column 6, lines 5-10, 20-22).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's client request is an HTTP request in Yoko's method in order for a user to gain access to webpages.

As per claim 33, Yoko does not explicitly disclose the method of claim 32 further comprising sending an HTTP redirect message to the client, the HTTP redirect message identifying the selected real server.

However, in analogous art, Yu discloses the server will server the request but piggyback a message with the returned object (URL) to tell the requester to send future requests to another server (column 12, lines 58-63, column 14, lines 50-56).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Yu's redirect is an HTTP redirect comprises a URL of the selected real server in Yoko's method in order to communicate with the requester an updated server assignment.

As per claim 38, Yoko discloses the computer program product of claim 37 wherein load balancing is performed only to connect a client with one of the real servers (column 4, lines 53-60).

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokomizo (hereinafter "Yoko", US Patent No. 6,163,796) in view of Yu (US Patent No. 6,351,775 B1) in further view of Bruck et al. (hereinafter "Bruck", US Patent No. 6,801,949 B1) and in further view of Aziz et al (hereinafter "Aziz", 6,597,956 B1).

As per claim 11, Yoko, in view of Yu and Bruck, does not explicitly disclose the method of claim 1 further comprising binding an additional real server to the primary virtual server and load sharing between the new real server and the original set of real servers. However, the use and advantages of load sharing between the original virtual and real servers with additional real servers is well known to one skilled in the relevant art at the time the invention was made as evidenced by Aziz (column 11, lines 7-31).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Aziz's load sharing between the original virtual and real servers with additional real servers Yoko's method in order for the additional servers to serve web requests intended for the server farm like the original servers.

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokomizo (hereinafter "Yoko", US Patent No. 6,163,796) in view of Yu (US Patent No. 6,351,775 B1) in further view of Bruck et al. (hereinafter "Bruck", US Patent No. 6,801,949 B1) and in further view of Devarakonda et al. (hereinafter "Devar", US Patent Publication No. 2001/0052024 A1).

As per claim 30, Yoko, in view of Yu and Bruck, does not explicitly disclose receiving a request from the client during the transaction for connection to an SSL page and creating a link between the selected real server and the SSL page.

However, Devar discloses an important example of this is the support of the Secure Sockets Layer (SSL) protocol, which is a very popular protocol used for the exchange of secure information between clients and servers on the WWW, and for other environments. In SSL, a session key is generated by the client, and passed to the server after encrypting it using the server's public key. Session keys have a lifetime (e.g. 100 seconds). Subsequent SSL requests from the same client within the lifetime of the session key will reuse the key (paragraph [0016]).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Devar's connection to an SSL page and creating a link between the selected real server and the SSL page in Yoko's method in order to exchange of secure information between client and server.

### ***Response to Arguments***

6. Applicant's arguments have been fully considered and are persuasive. Therefore, the final rejection has been withdrawn.
7. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

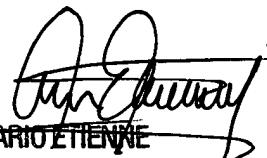
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara N Burgess whose telephone number is (571) 272-3996. The examiner can normally be reached on M-F (8:00am-4:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Barbara N Burgess  
Examiner  
Art Unit 2157

April 14, 2005



ARIO ETIENNE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100